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US PTO WP 2770

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01/17/2003 18:48 FAX 3300476

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ATTORNEY'S DOCKET NO. 4906.P001D

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE

APPLICATION OF: William Salkewicz

APPLICATION NO.: 10/020,388

FILED: December 14, 2001

TITLE: DYNAMIC BINDING OF
NETWORK SERVICES

ART UNIT: 2152

EXAMINER: Not Yet Assigned

Certificate of Facsimile

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Commissioner for Patents
Washington, D.C. 20231

January 17, 2003 (Date)

Printed Name: Steven Gilliam

Signature:

PRELIMINARY AMENDMENT

Applicants respectfully request the Examiner to enter the following amendment prior to
examination of this patent application.

AMENDMENT UNDER CFR §1.121(b)

In the Specification:

Please replace the BRIEF DESCRIPTION OF THE DRAWINGS section with the
following:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A is a generalized diagram of a multi-protocol bridge/router.
Figure 1B is an illustrative example of the topology of and connections.
Figure 2A and 2B are network graphs of two illustrative example networks.
Figure 3 is a network graph of an illustrative network in which the networks of Figures
2A and 2B are joined.

Attorney Docket No. 4906.P001D

1

Serial No.: 10/020,388

Received from <3300476> at 1/17/03 6:52:05 PM [Eastern Standard Time]

Received from <3086606> at 1/21/03 9:55:40 AM [Eastern Standard Time]

Figure 4 is an illustrative drawing of a segment of a single physical medium capable of carrying multiple information flows which in its own virtual circuit (or channel).

Figure 5 is an illustrative drawing of two virtual networks each made up of two independent segments.

Figure 6 is an illustrative drawing that provides additional details of some of the physical constituents of the virtual networks of Figure 5.

Figure 7 is an illustrative drawing which shows the logical or higher level view of the two virtual networks VN1 and VN2 of Figures 5 and 6.

Figure 8 is an illustrative drawing that shows that the Internet can provide the shared network resources of Figures 5 and 6.

Figure 9 is an illustrative drawing that shows tunneling through the Internet to provide the shared resources of Figures 5 and 6.

Figure 10 is a logical or high level view of the two virtual networks of Figure 9.

Figure 11 is a generalized illustrative drawing of the organization of node IN1 to achieve tunneling.

Figure 12 is a conceptual drawing of one possible router configuration that can be used to implement intermediate node IN1 of Figure 7.

Figure 13 is a generalized block diagram of a network device that instantiates multiple virtual network machine routers in electronic memory in accordance with one embodiment of the invention.

Figure 14 is a generalized block diagram of a network device that instantiates a virtual network machine with multiple layer 2 sub-interface data structures and multiple layer 3

01/17/2003 18:48 FAX 3300476

BTAYLOR ZAFMAN

004

interfaces and binding data structures that associate layer 2 sub-interface data structures and layer 3 interfaces;

Figure 15 is a generalized block diagram of the network device of Figure 14, except that one binding data structure has been removed and another binding data structure has been created.

Figure 16 is a generalized block diagram of a network device that implements a virtual network machine router and a virtual network machine bridge.

Figure 17 is a generalized block diagram of the network device as in Figure 16, except that one binding data structure has been removed and another binding data structure has been created.

Figure 18 is a generalized block diagram of the network device of Figure 14, except that one binding data structure has been eliminated and another binding data structure has been created.

Figure 19 is a generalized block diagram of a network device which comprises a computer which instantiates multiple virtual machines in accordance with an embodiment of the invention.

Figure 20 is a generalized block diagram of the network device of Figure 19 except that one binding data structure has been removed and another binding data structure has been created.

Figure 21 is a generalized block diagram of a subscriber management system in accordance with a presently preferred embodiment of the invention.

01/21/03 TUE 10:46 FAX 3086606

US PTO WP 2770

006

01/17/2003 18:48 FAX 3300476

BTAYLOR ZAFMAN

005

CONCLUSION

The Examiner is invited to telephone the undersigned to help expedite any further prosecution of the present application.

The Commissioner is hereby authorized to credit any overpayment or to charge any fees or fee deficiencies under 37 C.F.R. §§ 1.16 and 1.17 in connection with this communication to our Deposit Account No. 02-2666.

Respectfully submitted,
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

Date: 1/17/03



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Attorney Docket No. 4906.P001D

4

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01/17/2003 18:49 FAX 3300476

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006

VERSION WITH MARKINGS TO SHOW CHANGES:

Figure 1A is a generalized diagram of a multi-protocol bridge/router.

Figure 1B is an illustrative example of the topology of and connections.

Figure 2A and 2B are network graphs of two illustrative example networks.

Figure 3 is a network graph of an illustrative network in which the networks of Figures 2A and 2B are joined.

Figure 4 is an illustrative drawing of a segment of a single physical medium capable of carrying multiple information flows which in its own virtual circuit (or channel).

Figure 5 is an illustrative drawing of two virtual networks each made up of two independent segments.

Figure 6 is an illustrative drawing that provides additional details of some of the physical constituents of the virtual networks of Figure 5.

Figure 7 is an illustrative drawing which shows the logical or higher level view of the two virtual networks VN1 and VN2 of Figures 5 and 6.

Figure 8 is an illustrative drawing that shows that the Internet can provide the shared network resources of Figures 5 and 6.

Figure 9 is an illustrative drawing that shows tunneling through the Internet to provide the shared resources of Figures 5 and 6.

Figure 10 is a logical or high level view of the two virtual networks of Figure 9.

Figure 11 is a generalized illustrative drawing of the organization of node IN1 to achieve tunneling.

Figure 12 is a conceptual drawing of one possible router configuration that can be used to implement intermediate node IN1 of Figure 7.

01/17/2003 18:40 FAX 3300476

BTAYLOR ZAFMAN

007

Figure 13 is a generalized block diagram of a network device that instantiates multiple virtual network machine routers in electronic memory in accordance with one embodiment of the invention.

Figure 14 is a generalized block diagram of a network device that instantiates a virtual network machine with multiple layer 2 sub-interface data structures and multiple layer 3 interfaces and binding data structures that associate layer 2 sub-interface data structures and layer 3 interfaces;

Figure 15 is a generalized block diagram of the network device of Figure 14, except that one binding data structure has been removed and another binding data structure has been created.

Figure 16 is a generalized block diagram of a network device that implements a virtual network machine router and a virtual network machine bridge.

Figure 17 is a generalized block diagram of the network device as in Figure 16, except that one binding data structure has been removed and another binding data structure has been created.

Figure 18 is a generalized block diagram of the network device of Figure 14, except that one binding data structure has been eliminated and another binding data structure has been created.

Figure 19 is a generalized block diagram of a network device which comprises a computer which instantiates multiple virtual machines in accordance with an embodiment of the invention.

Figure 20 is a generalized block diagram of the network device of Figure 19 except that one binding data structure has been removed and another binding data structure has been created.

01/21/03 TUE 10:47 FAX 3086606

US PTO WP 2770

009

01/17/2003 18:49 FAX 3300476

BTAYLOR ZAFMAN

008

Figure 21 is a generalized block diagram of a subscriber management system in accordance with a presently preferred embodiment of the invention.

Figure 22 is a generalized block diagram of one of the virtual routers and associated data structures of Figure 21 in accordance with a present embodiment of the invention.

Attorney Docket No. 4906.P001D

7

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